CLAIMS

What is claimed:

1. A method for depleting a sample of at least three proteins comprising the step of contacting a sample with at least one chromatographic medium, the at least one chromatographic medium being capable of removing albumin, IgG, and a third abundant protein from the sample.

2. The method of claim 1 wherein the at least one chromatographic medium comprises two or more different chromatographic surfaces for removing two or more different proteins.

3. The method of claim 1 wherein the sample is one or more of blood plasma, blood serum, cerebrospinal fluid, and urine.

4. The method of claim 1 wherein the chromatographic medium is present in a chromatography column.

5. The method of claim 4 wherein the chromatographic column comprises particles.

6. The method of claim 4 wherein the chromatographic column comprises an immunoaffinity chromatography surface.

7. The method of claim 1 wherein the chromatographic medium, comprises a chromatography disk.

8. The method of claim 1 wherein the sample is moved with a liquid chromatography apparatus.

9. An apparatus for analyzing a sample of molecules comprising a liquid chromatography pumping apparatus and at least one chromatographic medium, the at least one chromatographic medium being capable of removing albumin, IgG, and a third abundant protein from the sample.

10. The apparatus of claim 9 wherein the at least one chromatographic medium comprises one or more chromatography columns arranged in series with another chromatography column.

11. The apparatus of claim 9 wherein the at least one chromatographic medium comprises one or more chromatography disks arranged in series with a chromatography column.

12. The method of claim 1 wherein the third abundant protein is selected from the group consisting of transferrin, orosomucoid, fibrinogen, immunoglobulin A, haptoglobin, alpha-2-macroglobulin, immunoglobulin M, C3 complement, and alpha-1-antitrypsin.

13. The method of claim 1 further comprising removing a fourth abundant protein.

14. The method of claim 13 wherein the fourth abundant protein is selected from the group consisting of transferrin, orosomucoid, fibrinogen, immunoglobulin A, haptoglobin, alpha-2-macroglobulin, immunoglobulin M, C3 complement, and alpha-1-antitrypsin.

15. The method of claim 14 further comprising removing a fifth abundant protein.

16. The method of claim 15 wherein the fifth abundant protein is selected from the group consisting of transferrin, orosomucoid, fibrinogen, immunoglobulin A,

haptoglobin, alpha-2-macroglobulin, immunoglobulin M, C3 complement, and alpha-1-antitrypsin.

17. The method of claim 16 further comprising removing a sixth abundant protein.

18. The method of claim 17 wherein the sixth abundant protein is selected from the group consisting of transferrin, orosomucoid, fibrinogen, immunoglobulin A, haptoglobin, alpha-2-macroglobulin, immunoglobulin M, C3 complement, and alpha-1-antitrypsin.

19. A device for substantially removing a protein from a sample comprising, in serial fluidic communication, a chromatography column and a chromatography disk.

20. A device for depleting a sample of at least three proteins comprising:

an immunoaffinity chromatography surface for each protein to be depleted from the sample where the chromatographic surfaces are arranged in serial fluidic communication as a single chromatographic column.

21. The device of claim 20, wherein the proteins to be depleted from the sample comprise albumin, transferrin and immunoglobulin G.

22. The device of claim 21, wherein the proteins to be depleted from the sample further comprise haptoglobin, alpha-1-antitrypsin and immunoglobulin A.

23. A device for depleting a sample of at least three proteins comprising:

a first chromatography column functionalized to substantially remove albumin from the sample;

a second chromatography column in serial fluidic communication with the first chromatography column and functionalized to substantially remove immunoglobulin G from the sample; and

a first chromatography disk in serial fluidic communication with the second chromatography column and functionalized to substantially remove a third protein from the sample.

24. The device of claim 23, wherein the third protein is selected from the group consisting of transferrin, orosomucoid, fibrinogen, immunoglobulin A, haptoglobin, alpha-2-macroglobulin, immunoglobulin M, C3 complement, and alpha-1-antitrypsin.

25. The device of claim 23, further comprising a second chromatography disk in serial fluidic communication with the first chromatography disk and functionalized to substantially remove a fourth protein from the sample.

26. The device of claim 25, wherein the fourth protein is selected from the group consisting of transferrin, orosomucoid, fibrinogen, immunoglobulin A, haptoglobin, alpha-2-macroglobulin, immunoglobulin M, C3 complement, and alpha-1-antitrypsin.

27. The device of claim 25, further comprising a third chromatography disk in serial fluidic communication with the second chromatography disk and functionalized to substantially remove a fifth protein from the sample.

28. The device of claim 27, wherein the fifth protein is selected from the group consisting of transferrin, orosomucoid, fibrinogen, immunoglobulin A, haptoglobin, alpha-2-macroglobulin, immunoglobulin M, C3 complement, and alpha-1-antitrypsin.

29. The device of claim 27, further comprising a fourth chromatography disk in serial fluidic communication with the third chromatography disk and functionalized to substantially remove a sixth protein from the sample.

30. The device of claim 29, wherein the sixth protein is selected from the group consisting of transferrin, orosomucoid, fibrinogen, immunoglobulin A, haptoglobin, alpha-2-macroglobulin, immunoglobulin M, C3 complement, and alpha-1-antitrypsin.